MICROSTATION INFORMATION – BRIDGE DEPARTMENT

DOWNLOADABLE BRIDGE FILES ON THE CFLHD'S FTP SITE

The following METRIC files are on our ftp server in bridge\fhwam.zip

metric.dgn = MicroStation bridge seed files (this is the **main file** for creating drawings).

fhwam.cel = standard bridge cell library
bridge sheet borders used are MCENT (Metric sheet border for all but bar list sheets), LAYOT1 (TS&L sheet), LASEMB (plotting border to be used with MCENT to get proper scale on 11x17 sheet)

fhwaft.rsc = standard bridge font libraries
Primarily use fonts 2 and 24 (see **TEXT** below for details)

fhwals.rsc = custom bridge line style libraries

metricbar.dgn = bridge bar list sheets
Sample bridge sheet border, blank sheet border, standard bends (Note: An alternate form of bar list sheet, e.g. ASA, may be used with approval)

The following ENGLISH files are on our ftp server in bridge\fhwae.zip

seed.dgn = MicroStation bridge seed files (this is the **main file** for creating drawings).

fhwae.cel = standard bridge cell library
bridge sheet borders used are ECENT (English sheet border for all but bar list sheets), LAYOT1 (TS&L sheet), LASER (plotting border to be used with ECENT to get proper scale on 11x17 sheet)

fhwaft.rsc = standard bridge font libraries
Primarily use fonts 2 and 24 (see **TEXT** below for details)

fhwals.rsc = custom bridge line style libraries

englishbar.dgn = bridge bar list sheets
Sample bridge sheet border, blank sheet border

NAMING CONVENTIONS FOR BRIDGE .dgn FILES & SHEET NUMBERING

File naming convention: Use RG number with identifying information.

Example: RG2737a.dgn
RG2737abut.dgn
RG2737gdr.dgn
RG2737rail.dgn

RG2737bar.dgn

PS&E PACKAGE COMPOSITION AND SHEET LAYOUT FORMAT

The following table is to be used as a general guide for the composition of a typical FLH bridge PS&E package. Additional sheets may be required depending on the complexity of the bridge. The Sheet Number shall begin with the Record Group (RG) number assigned to the bridge followed by the sequential alpha code.

Drawing No.	Bridge Drawing	Description
RG2737-A	1 of 17	Plan, elevation, north arrow: May have general notes, estimate of quantities if space allows
B	2 of 17	Foundation plan, north arrow, boring logs: May have slope protection, quantity estimate, general notes if A sheet does not have adequate space
C	3 of 17	Abutment
D	4 of 17	Abutment
E	5 of 17	Abutment as required
F	6 of 17	Abutment as required
G	7 of 17	Pier
H	8 of 17	Pier as required
I	9 of 17	Girder
J	10 of 17	Girder
K	11 of 17	Girder as required
L	12 of 17	Deck plan, typical section
M	13 of 17	Deck plan
N	14 of 17	Rail
O	15 of 17	Reinforcing bar lists
P	16 of 17	Reinforcing bar lists as required
R	17 of 17	Reinforcing bar lists as required

METRIC TEXT

The following would apply to a 1:10 scale drawing:

FONT 2:	**WEIGHT**	**TX**
TITLES	WT=3	60 mm
SECTIONS/VIEWS	WT=2	44 mm

FONT 24 (italic)		
All general text	WT=1	35 mm

For other scales see Scale Conversion section below.

ENGLISH TEXT

The following would apply to a 1 ½”=1’-0” scale drawing:

FONT 2:	**WEIGHT**	**TX**
TITLES	WT=3	:1.92
SECTIONS/VIEWS	WT=2	:1.40
FONT 24 (italic)		
All general text	WT=1	:1.12

For other scales see Scale Conversion section below.

FONT 24 TEXT SPECIAL CHARACTERS

\ = diameter symbol
` = centerline symbol
| = plus & minis symbol
^ = degree symbol

METRIC WORKING UNITS

mm	Master Units
Blank	Sub-units
1	Per Millimeter
1000	Positional Units Per

SCALES

11”x 17” sheets are considered true scale. Scale Conversions – See below.

Note: Bridge sheets are drawn actual size, the border sheet, and cells are imported in at an active scale shown below. The text size is also shown for the active scale being used.

Note: To work with a drawing developed using the roadway CADD standards and seed files (e.g. contours) first, change the working units to 1 mm, 1000, then, scale the drawing up 1000 times because there is a difference in the working units between roadway and bridge.

SCALE CONVERSIONS W/ FULL SIZE [22x34]

APPROX. SIZE	METRIC SCALE	AC=MCENT, MWEST, MEAST) AS=	TERMINATOR AC=ARROW TS=	TX=(140)	TX=(175)	TX=(240)
1/4" = 1'-0"	1:50	50	793.75	175	220	300
3/8" = 1'-0"	1:30	30	476.25	105	132	180
1/2" = 1'-0"	1:25	25	396.875	87.5	110	150
3/4" = 1'-0"	1:20	20	317.5	70	88	120
1-1/2" = 1'-0"	1:10	10	158.75	35	44	60
3" = 1'-0"	1:5	5	79.375	17.5	22	30
1" = 10'-0"	1:100	100	1587.5	350	440	600
1" = 20'-0"	1:250	250	3968.75	875	1100	1500
1"= 40'-0"	1:500	500	7937.5	1750	2200	3000

AUTO DIMENSION TERMINATOR

Cell = Arrow
Width = 2.486
Height = 0.426

ACTIVE SCALE COMPUTATION FOR STORED CELLS

For Metric Scale 1: [50] take [50] times 15.875 = 793.75

TEXT COMPUTATION

For Metric Text 1: [50] take [50] times 3.5 = 175

FOR TRUE SCALE ON [11X17] SHEETS:

The above table is for true scale on [22” x 34”] sheets. Cells MCENT and LASEMB @ AS=10 will produce a [11” x 17”] sheet which scales to 1:20.

ENGLISH WORKING UNITS

‘	Master Units
“	Sub-units
12	Inches per foot
1600	Positional Units per inch

SCALES

11”x 17” sheets are considered true scale. Scale Conversions – See below.

Note: Bridge sheets are drawn actual size, the border sheet, and cells are imported in at an active scale shown below. The text size is also shown for the active scale being used.

Note: To work with a drawing developed using the roadway CADD standards and seed files (e.g. contours) first, change the working units to 12, 1600, then, scale the drawing up 19.2 times because there is a difference in the working units between roadway and bridge.

SCALE CONVERSIONS W/ FULL SIZE [22x34]

SCALE	AC=(ECENT, EWEST) AS=	TERMINATOR AC=ARROW TS=	TX=(140)	TX=(175)	TX=(240)
1/4" = 1'-0"	48	48	:6.72	:8.40	:11.52
3/8" = 1'-0"	32	32	:4.48	:5.60	:7.68
1/2" = 1'-0"	24	24	:3.36	:4.20	:5.76
3/4" = 1'-0"	16	16	:2.24	:2.80	:3.84
1" = 1'-0"	12	12	:1.68	:2.10	:2.88
1 1/2” = 1’-0”	8	8	:1.12	:1.40	:1.92
3" = 1'-0"	4	4	:.56	:.70	:.96
1" = 10'-0"	120	120	:16.80	:21.00	:28.80
1" = 20'-0"	240	240	:33.60	:42.00	:57.60

FOR TRUE SCALE ON [11X17] SHEETS:

The above table is for true scale on [22”x 34”] sheets. Cells ECENT and LASER @ AS=8 will produce a [11”x 17”] sheet which scales to 3/4” = 1’- 0”

GENERAL CADD STANDARDS

The following table is intended to be used a guide for the proper Line Codes, Line Weights, Text Sizes, Fonts, and Levels for CADD level elements included in Bridge PS&E packages:

	Line Code	Line Weight	Text Size	Font	Level
BRIDGE BORDERS					
Park Name	0	2	4	2	8
Structure/Crossing Name	0	2	4	2	8
State Name	0	2	4	2	8
Sheet Title	0	3	6	2	8
Information Blocks (top of border)	0	0	3.5	2	1
Information Blocks (bottom of border)	0	0	3.5	2	8
PRELIMINARY…label	0	2	12	7	62
Time & Date of Plot	0	0	3.5	23	61
File Location	0	0	3.5	23	61
BRIDGE PLAN DETAILING					
Detail Title	0	3	4	2	1
Detail Sub Title	0	2	3.5	2	1
Detail Scale	0	2	3.5	2	1
Concrete Outline	0	3	N/A	N/A	2
Structural Steel Outline	0	1	N/A	N/A	2
Reinforcing Steel	0	1	N/A	N/A	4
Construction Joint Line	0	0	N/A	N/A	2
Existing Structure and Phantom Lines	6	0	N/A	N/A	11
Hidden Lines	3	0	N/A	N/A	2
Centerlines	4	0	N/A	N/A	2
Dimensions Lines	0	0	N/A	N/A	3
Witness Lines	0	0	N/A	N/A	3
Dimension Text	0	1	3.5	24	3
Detailing Notes Text	0	1	3.5	24	3
Rebar Labels and Text	0	1	3.5	24	5
Plan and Elevation General Notes	0	1	3.5	24	9